

WHAT IS CLAIMED IS:

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1. A Web service providing apparatus,
comprising:

a server processing part controlling receipt
of a process request to request a process from a
10 requesting apparatus connected to the Web service
providing apparatus via a communication line and
transmission of a process response corresponding to the
process request to the requesting apparatus in
accordance with a predetermined protocol;

15 a condition acquisition control part, in
response to an instruction from the server processing
part, controlling acquisition of target information
designated by the process request from a management
apparatus managing the target information based on a
20 first processable condition under which the target
information is processable to the management apparatus
and the Web service providing apparatus; and

a service providing part performing the
requested process on the target information and sending
25 a result of the process to the server processing part.

5 2. The Web service providing apparatus as
claimed in claim 1, further comprising:

 a program including the condition acquisition
control part and the service providing part;

 a control service managing a hardware resource
10 used in the process; and

 an operating system controlling the program
and the control service.

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 3. The Web service providing apparatus as
claimed in claim 1, further comprising a client
processing part, in response to an instruction issued by
20 the condition acquisition control part, controlling
transmission of a process request to the management
apparatus and receipt of a process response from the
management apparatus in accordance with the
predetermined protocol.

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4. The Web service providing apparatus as
5 claimed in claim 3, wherein the condition acquisition
control part comprises:

a sequence control part controlling a sequence
of processes to acquire a second processable condition
regarding the target information from the management
10 apparatus and internally acquire a third processable
condition regarding the target information in the Web
service providing apparatus; and

a condition determination part determining the
first processable condition based on the second
15 processable condition and the third processable
condition acquired by the sequence control part.

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5. The Web service providing apparatus as
claimed in claim 4, the sequence control part comprises:

a first control part controlling the client
processing part so as to acquire the second processable
25 condition from the management apparatus by sending a

process request to request the second processable
condition to the management apparatus;

a second control part controlling the client
processing part so as to acquire the third processable
5 condition from the Web service providing apparatus by
internally issuing a process request to request the
third processable condition to the server processing
part;

a determination instruction part causing the
10 condition determination part to make the determination
based on the second processable condition and the third
processable condition; and

an information acquisition part acquiring the
target information from the management apparatus in
15 accordance with the first processable condition
determined by the condition determination part.

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6. The Web service providing apparatus as
claimed in claim 3, the client processing part
comprises:

a process request creation part, in response
25 to an instruction issued by the sequence control part,

creating a process request, which is to be sent to the management apparatus, corresponding to the instruction in accordance with the predetermined protocol; and

a process response interpretation part

5 interpreting a process response, which is received from the management apparatus, corresponding to the process request and informing a result of the interpretation to the sequence control part.

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7. The Web service providing apparatus as claimed in claim 1, wherein the service providing part
15 comprises a service execution part executing a process corresponding to a process request received from the requesting apparatus or internally created.

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8. The Web service providing apparatus as claimed in claim 1, wherein the server processing part comprises:

25 a process request interpretation part

interpreting the process request to request the process
on the target information in accordance with the
predetermined protocol; and

a process response creation part creating a
5 process response to indicate a result of the process in
accordance with the predetermined protocol.

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9. The Web service providing apparatus as
claimed in claim 8, wherein the process request
interpretation part comprises:

a determination part determining whether the
15 process request is to acquire the target information
from the management apparatus; and

a notification part informing the condition
acquisition control part of the process request based on
a result of the determination made by the determination
20 part.

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10. The Web service providing apparatus as

claimed in claim 8, the process response creation part comprises a control result creation part creating a process response to indicate a result of the control of the condition acquisition control part in accordance
5 with the predetermined protocol.

10 11. The Web service providing apparatus as claimed in claim 1, wherein the condition acquisition control part comprises:

an attribute information acquisition part acquiring attribute information regarding the target
15 information from the management apparatus; and

a third control part causing the client processing part to internally issue the process request to request the process on the target information to the client processing part based on the attribute
20 information,

wherein the service providing part executes the process requested by the requesting apparatus via the server processing part based on the attribute information.

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12. The Web service providing apparatus as
5 claimed in claim 1, further comprising a display part,
the display part comprising:

a first display part displaying a list of
selectable apparatuses that a user is allowed to select
among apparatuses connected via the communication line;
10 a second display part, when the user selects a
desired apparatus from the list of apparatuses,
displaying a list of information items managed by the
management apparatus; and
an apparatus determination part, when the user
15 designates a desired information item from the list of
information items and the desired apparatus from the
list of selectable apparatuses, determining the
designated apparatus as a processing apparatus to
perform the process.

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13. The Web service providing apparatus as
25 claimed in claim 12, wherein the second display part

displays the information items in a reduced size on the display part.

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14. The Web service providing apparatus as claimed in claim 1, wherein the requesting apparatus is one of the Web service providing apparatus, the management apparatus and a terminal connected to each other via the communication line.

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15. The Web service providing apparatus as claimed in claim 1, wherein the communication line is one of a network communication line including a wireless LAN, a serial communication line including an infrared communication, and a parallel communication line.

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16. The Web service providing apparatus as

claimed in claim 1, wherein the predetermined protocol is a Simple Object Access Protocol.

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17. A method of providing a Web service for a Web service providing apparatus, the method comprising:
- a server processing step of controlling
 - 10 receipt of a process request to request a process from a requesting apparatus connected to the Web service providing apparatus via a communication line and transmission of a process response corresponding to the process request to the requesting apparatus in
 - 15 accordance with a predetermined protocol;
 - a condition acquisition control step of controlling, corresponding to an instruction from the server processing step, acquisition of target information designated by the process request from a
 - 20 management apparatus managing the target information based on a first processable condition under which the target information is processable to the management apparatus and the Web service providing apparatus; and
 - a service providing step of performing the
 - 25 requested process on the target information and

informing the server processing step of a result of the process.

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18. A Web service providing apparatus,
comprising:

- 10 a service providing part managing target information and providing the target information to a processing apparatus, which performs a process on the target information, in accordance with a first processable condition received from the processing apparatus;
- 15 a process request interpretation part interpreting a process request to request the process in accordance with a predetermined portocol and informing the service providing part of the process; and
- 20 a process request creation part creating a process response to indicate a result of the process in accordance with the predetermined protocol.

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19. The Web service providing apparatus as claimed in claim 18, wherein the service providing part comprises a processable condition providing part, in response to receipt of a process request to acquire a
5 second processable condition with respect to the processing apparatus, sending a process response to indicate the second processable condition in accordance with the predetermined protocol, and after the transmission of the process response to indicate the
10 second processable condition, the service providing part provides the target information to the processing apparatus in accordance with the first processable condition received from the processing apparatus.

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20. The Web service providing apparatus as claimed in claim 18, further comprising:
20 a process request creation part creating the process request to request the process in accordance with the predetermined protocol; and
a process response interpretation part
interpreting the received process response corresponding
25 to the process request.

5 21. The Web service providing apparatus as
claimed in claim 18, further comprising a display part,
the display part comprising:

 a first display part displaying a list of
selectable apparatuses that a user is allowed to select
10 among apparatuses connected via a communication line;

 a second display part, when the user selects a
desired apparatus from the list of selectable
apparatuses, displaying a list of information items
managed by the selected apparatus; and

15 an apparatus determination part, when the user
designates a desired information item from the list of
information items and the desired apparatus from the
list of selectable apparatuses, determining the
designated apparatus as the processing apparatus.

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 22. A method of providing a Web service for a
25 Web service providing apparatus, the method comprising:

a service providing step of managing target information and providing the target information to a processing apparatus to perform a process on the target information based on a first processable condition

5 received from the processing apparatus;

a process request interpretation step of interpreting a process request to request the process in accordance with a predetermined protocol and informing the service providing step of the process; and

10 a process request creation step of creating a process response to indicate a result of the process in accordance with the predetermined protocol.

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23. A terminal, comprising:

a process request creation part creating a process request to cause a first apparatus to acquire target information managed by a second apparatus from the second apparatus and perform a process on the target information in accordance with a predetermined protocol;

a process response interpretation part interpreting a process response corresponding to the process request and acquiring a result of the process

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performed by the first apparatus; and

a display control part displaying the result of the process on a display unit of the terminal.

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24. A recording medium for storing a program to cause a terminal to execute a procedure, the
10 procedure comprising:

a process request creation step of creating a process request to request a first apparatus to acquire target information managed by a second apparatus from the second apparatus and perform a process on the target
15 information in accordance with a predetermined protocol;

a process response interpretation step of interpreting a process response corresponding to the process request and acquiring a result of the process of the first apparatus; and

20 a display control step of displaying the result of the process on a display unit of the terminal.

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25. A program to cause a terminal to execute a procedure, the procedure comprising:

a process request creation step of creating a process request to request a first apparatus to acquire
5 target information managed by a second apparatus from the second apparatus and perform a process on the target information in accordance with a predetermined protocol;

a process response interpretation step of interpreting a process response corresponding to the
10 process request and acquiring a result of the process of the first apparatus; and

a display control step of displaying the result of the process on a display unit of the terminal.

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26. A Web service providing apparatus, comprising:

20 a server processing part controlling receipt of a process request to request a process from a requesting apparatus connected to the Web service providing apparatus via a communication line and transmission of a process response corresponding to the
25 process request to the requesting apparatus in

accordance with a predetermined protocol;

a condition acquisition control part, in response to an instruction from the server processing part, controlling transmission of target information designated by the process request to a processing apparatus based on a first processable condition under which the target information is processable to the processing apparatus and the Web service providing apparatus; and

10 a service providing part, in response to receipt of a result of the process performed by the processing apparatus on the target information, informing the server processing part of the result of the process.

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27. The Web service providing apparatus as
20 claimed in claim 26, further comprising:

a program including the condition acquisition control part and the service providing part;

a control service managing a hardware resource used in the process; and

25 an operating system controlling the program

and the control service.

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28. The Web service providing apparatus as claimed in claim 26, further comprising a client processing part, in response to an instruction issued by the condition acquisition control part, controlling transmission of a process request to the processing apparatus and receipt of a process response from the processing apparatus in accordance with the predetermined protocol.

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29. The Web service providing apparatus as claimed in claim 28, wherein the condition acquisition control part comprises:

a sequence control part controlling a sequence of processes to acquire a second processable condition regarding the target information from the processing apparatus and internally acquire a third processable condition regarding the target information from the Web

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service providing apparatus; and

a condition determination part determining the
first processable condition based on the second
processable condition and the third processable
5 condition acquired by the sequence control part.

10 30. The Web service providing apparatus as
claimed in claim 29, wherein the sequence control part
comprises:

a first control part controlling the client
processing part so as to acquire the second processable
15 condition from the processing apparatus by sending a
process request to request the second processable
condition to the processing apparatus;

a second control part controlling the client
processing part so as to acquire the third processable
20 condition from the Web service providing apparatus by
internally issuing a process request to request the
third processable condition to the server processing
part;

a determination instruction part causing the
25 condition determination part to make the determination

based on the second processable condition and the third processable condition; and

an information transmission part sending the target information to the processing apparatus in
5 accordance with the first processable condition determined by the condition determination part.

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31. The Web service providing apparatus as claimed in 29, wherein the client processing part comprises:

a process request creation part, in response
15 to an instruction issued by the sequence control part, creating a process request, which is sent to the processing apparatus, corresponding to the instruction in accordance with the predetermined protocol; and

a process response interpretation part
20 interpreting a process response, which is received from the processing apparatus, corresponding to the process request and informing a result of the interpretation of the sequence control part.

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32. The Web service providing apparatus as
claimed in claim 26, wherein the service providing part
5 comprises a service execution part executing a process
corresponding to a process request received from the
requesting apparatus or internally created.

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33. The Web service providing apparatus as
claimed in claim 26, wherein the server processing part
comprises:

15 a process request interpretation part
interpreting the process request to request the process
on the target information in accordance with the
predetermined protocol; and

a process response creation part creating a
20 process response to indicate a result of the process in
accordance with the predetermined protocol.

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34. The Web service providing apparatus as claimed in 33, wherein the process request interpretation part comprises:

5 a determination part determining whether the process request is to send the target information to the processing apparatus; and

a notification part informing the condition acquisition control part of the process request based on a result of the determination made by the determination
10 part.

15 35. The Web service providing apparatus as claimed in claim 33, wherein the process response creation part comprises a control result creation part creating a process response to indicate a result of the control of the condition acquisition control part in
20 accordance with the predetermined protocol.

25 36. The Web service providing apparatus as

claimed in claim 26, further comprising a display part,
the display part comprising:

a first display part displaying a list of
selectable apparatuses that a user is allowed to select
5 among apparatuses connected via a communication line;

a second display part, when the user selects a
desired apparatus from the list of selectable
apparatuses, displaying a list of information items
managed by the selected apparatus on the display part;
10 and

an apparatus determination part, when the user
designates a desired information item from the list of
information items and the desired apparatus from the
list of selectable apparatuses, determining the
15 designated apparatus as a processing apparatus.

20 37. The Web service providing apparatus as
claimed in claim 36, wherein the second display part
displays the information items in a reduced size on the
display part.

38. The Web service providing apparatus as
claimed in claim 26, wherein the requesting apparatus is
5 one of the Web service providing apparatus, the
processing apparatus, and a terminal connected to each
other via the communication line.

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39. The Web service providing apparatus as
claimed in claim 26, wherein the communication line is
one of a network communication line including a wireless
15 LAN, a serial communication line including an infrared
communication, and a parallel communication line.

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40. The Web service providing apparatus as
claimed in claim 26, wherein the predetermined protocol
is a Simple Object Access Protocol.

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41. A method of providing a Web service for a Web service providing apparatus, comprising:

5 a server processing step of controlling receipt of a process request to request a process from a requesting apparatus connected to the Web service providing apparatus via a communication line and transmission of a process response corresponding to the
10 process request to the requesting apparatus in accordance with a predetermined protocol;

 a condition acquisition control step of controlling, corresponding to an instruction from the server processing step, transmission of target
15 information designated by the process request to a processing apparatus processing the target information based on a first processable condition under which the target information is processable to the processing apparatus and the Web service providing apparatus; and

20 a service providing step of performing the requested process on the target information and informing the server processing step of a result of the process.

42. A Web service providing apparatus,
comprising:

- 5 a service providing part performing a process
on target information received from a management
apparatus managing the target information in accordance
with a first processable condition and providing a
result of the process to the management apparatus;
- 10 a process request interpretation part
interpreting a process request to request the process in
accordance with a predetermined protocol and informing
the service providing part of the process; and
- a process request creation part creating a
- 15 process response to indicate a result of the process in
accordance with the predetermined protocol.

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43. The Web service providing apparatus as
claimed in claim 42, wherein the service providing part
comprises a processable condition providing part, in
response to receipt of a process request to acquire a
- 25 second processable condition with respect to the

management apparatus, sending a process response to
indicate the second processable condition in accordance
with the predetermined protocol, and after the
transmission of the second processable condition, the
5 service providing part provides a result of the process
on the target information received from the management
apparatus in accordance with the first processable
condition.

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44. The Web service providing apparatus as
claimed in claim 42, further comprising:

15 a process request creation part creating the
process request to request the process in accordance
with the predetermined protocol; and

a process response interpretation part
interpreting the received process response corresponding
20 to the process request.

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45. The Web service providing apparatus as

claimed in claim 42, further comprising a display part,
the display part comprising:

- a first display part displaying a list of
selectable apparatuses that a user is allowed to select
5 among apparatuses connected via the communication line;
- a second display part, when the user selects a
desired apparatus from the list of selectable
apparatuses, displaying a list of information items
managed by the selected apparatus; and
- 10 an apparatus determination part, when the user
designates a desired information item from the list of
information items and the desired apparatus from the
list of selectable apparatuses, determining the
designated apparatus as a processing apparatus.

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46. A method of providing a Web service for a
- 20 Web service providing apparatus, the method comprising:
 - a service providing step of performing a
process on target information received from a management
apparatus managing the target information in accordance
with a first processable condition and providing a
25 result of the process to the management apparatus;

a process request interpretation step of interpreting a process request to request the process in accordance with a predetermined protocol and informing the service providing step of the process; and

5 a process request creation step of creating a process response to indicate a result of the process in accordance with the predetermined protocol.

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47. A terminal, comprising:

a process request creation part creating a process request to cause a first apparatus to perform a
15 process on target information managed by a second apparatus by sending the target information to the first apparatus in accordance with a predetermined protocol;

a process response interpretation part interpreting a process response corresponding to the
20 process request and acquiring a result of the process performed by the first apparatus; and

a display control part displaying the result of the process on a display unit of the terminal.

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48. A recording medium for storing a program
to cause a terminal to execute a procedure, the

5 procedure comprising:

a process request creating step of creating a
process request to cause a first apparatus to perform a
process on target information managed by a second
apparatus by sending the target information to the first
10 apparatus;

a process response interpretation step of
interpreting a process response corresponding to the
process request and acquiring a result of the process
performed by the first apparatus; and

15 a display control step of displaying the
result of the process on a display unit of the terminal.

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49. A program to cause a terminal to execute
a procedure, the procedure comprising:

a process request creating step of creating a
process request to cause a first apparatus to perform a
25 process on target information managed by a second

apparatus by sending the target information to the first apparatus;

5 a process response interpretation step of interpreting a process response corresponding to the process request and acquiring a result of the process performed by the first apparatus; and

a display control step of displaying the result of the process on a display unit of the terminal.

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50. A terminal connected to a management apparatus managing target information and a processing apparatus processing the target information via a communication line, comprising:

20 a client processing part controlling transmission of a process request to request a process to the management apparatus and the processing apparatus and receipt of a process response corresponding to the process request from the management apparatus and the processing apparatus in accordance with a predetermined protocol; and

25 a process control part acquiring a first processable condition, under which the target

information is processable to the processing apparatus,
and controlling the client processing part so that the
processing apparatus is allowed to perform the process
on the target information in accordance with the first
5 processable condition.

10 51. The terminal as claimed in claim 50,
wherein the process control part comprises:

a first sequence control part controlling a
sequence of processes to acquire a second processable
condition, under which the target information is
15 acquirable from the management apparatus, from the
management apparatus;

a second sequence control part controlling a
sequence of processes to acquire a third processable
condition, under which the target information is
20 writable in the processing apparatus, from the
processing apparatus; and

a condition determination part determining the
first processable condition based on the second
processable condition and the third processable
25 condition.

5 52. The terminal as claimed in claim 51,
 wherein the process control part comprises a third
 sequence control part controlling a sequence of
 processes such that the processing apparatus copies the
 target information from the management apparatus to the
10 processing apparatus in accordance with the first
 processable condition determined by the condition
 determination part.

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 53. The terminal as claimed in claim 51,
 wherein the process control part comprises a fourth
 sequence control part controlling a sequence of
20 processes such that the management apparatus writes the
 target information in the processing apparatus in
 accordance with the first processable condition
 determined by the condition determination part.

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54. The terminal as claimed in claim 50,
further comprising:

5 a process request creation part creating a
process request corresponding to a command issued by the
process control part in accordance with a predetermined
protocol; and

 a process response interpretation part
10 interpreting a process response received from the
management apparatus or the processing apparatus
corresponding to a process request.

15

55. The terminal as claimed in claim 54,
further comprising an operation part operating the
process on the target information managed by the
20 management apparatus, the process control part creates
the process request by controlling the process request
creation part.

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56. The terminal as claimed in claim 55,
wherein the operation part comprises a display part
displaying a first display area and a second display
5 area on a display unit of the terminal, the first
display area where a list of apparatuses including the
management apparatus and the processing apparatus is
displayed, the second display area where a list of
information items managed by the management apparatus is
10 displayed, and the condition acquisition control part
operates corresponding to copying manipulation or moving
manipulation of the target information, which is
displayed in the second display area, toward the
processing apparatus, which is displayed in the first
15 display area.

20 57. The terminal as claimed in claim 56,
wherein the operation part comprises a first process
designation part enabling a user to designate a type of
process through copying manipulation or moving
manipulation.

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58. The terminal as claimed in claim 57,
5 wherein the operation part further comprises a second
process designation part enabling the user to designate
a process method corresponding to the designated type of
process.

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59. The terminal as claimed in claim 56,
wherein the operation part further comprises a third
15 process designation part enabling the user to designate
a processing order of a plurality of information items
that the user designates in the second display area.

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60. A recording medium for storing a program
to cause a terminal to execute a procedure wherein the
terminal is connected to a management apparatus managing
25 target information and a processing apparatus processing

the target information via a communication line, the procedure comprising:

- a client processing step of controlling transmission of a process request to request a process
- 5 to the management apparatus and the processing apparatus and receipt of a process response corresponding to the process request from the management apparatus and the processing apparatus in accordance with a predetermined protocol; and
- 10 a process control step of acquiring a first processable condition, under which the target information is processable to the processing apparatus, and controlling the client processing step so that the processing apparatus is allowed to perform the process
- 15 on the target information in accordance with the first processable condition.

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- 61. A program to cause a terminal to execute a procedure wherein the terminal is connected to a management apparatus managing target information and a processing apparatus processing the target information
- 25 via a communication line, the procedure comprising:

a client processing step of controlling
transmission of a process request to request a process
to the management apparatus and the processing apparatus
and receipt of a process response corresponding to the
5 process request from the management apparatus and the
processing apparatus in accordance with a predetermined
protocol; and

a process control step of acquiring a first
processable condition, under which the target
10 information is processable to the processing apparatus,
and controlling the client processing step so that the
processing apparatus is allowed to perform the process
on the target information in accordance with the first
processable condition.

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62. A Web service providing apparatus,
20 comprising:
an information management part managing target
information;
a condition notification part, in response to
receipt of a request to acquire a second processable
25 condition regarding on the target information from a

terminal connected to the Web service providing
apparatus via a communication line, informing the
terminal of the second processable condition; and
a service providing part, in response to
5 receipt of a request to acquire the target information
in accordance with the first processable condition,
which is within the second processable condition, from
the processing apparatus, providing the target
information, which is acquired from the information
10 management part, to the processing apparatus.

15 63. The Web service providing apparatus as
claimed in claim 62, further comprising:
a program including the condition notification
part and the service providing part;
a control service managing a hardware resource
20 used in the process; and
an operating system controlling the program
and the control service.

64. The Web service providing apparatus as claimed in claim 62, further comprising:

a process request interpretation part

5 interpreting the process request to request the process in accordance with a predetermined protocol; and

a process response creation part creating a process response to indicate a result of the process in accordance with the predetermined protocol.

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65. The Web service providing apparatus as claimed in claim 64, wherein the process request
15 interpretation part interprets a process request, which is received from the terminal, to acquire a processable condition regarding the target information, and the process response creation part creates a process
20 response to indicate the second processable condition.

25 66. A method of providing a Web service, the

method comprising:

an information management step of managing target information;

a condition notification step, in response to
5 receipt of a request to acquire a second processable condition regarding on the target information from a terminal connected via a communication line, informing the terminal of the second processable condition; and

a service providing step, in response to
10 receipt of a request to acquire the target information in accordance with the first processable condition, which is within the second processable condition, from the processing apparatus, providing the target information, which is acquired from the information
15 management part, to the processing apparatus.

20 67. A Web service providing apparatus, comprising:

a condition notification part, in response to receipt of a request to acquire a third processable condition regarding target information managed by a
25 management apparatus from a terminal connected to the

Web service providing apparatus via a communication line,
informing the terminal of the third processable
condition;

5 a process request interpretation part
interpreting a process request to perform a process on
the target information in accordance with a first
processable condition, which is within the third
processable condition received from the terminal in
accordance with a predetermined protocol; and

10 a process response creation part creating a
process response to indicate a result of the process in
accordance with the predetermined protocol.

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68. The Web service providing apparatus as
claimed in claim 67, further comprising:

20 a process request creation part creating the
process request to acquire the target information in
accordance with the first processable condition in
accordance with the predetermined protocol; and

 a process response interpretation part
interpreting the process response indicate the target
25 information received from the management apparatus in

accordance with the predetermined protocol.

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69. A method of providing a Web service,
comprising:

a condition notification step, in response to
receipt of a request to acquire a third processable
10 condition regarding target information managed by a
management apparatus from a terminal connected via a
communication line, of informing the terminal of the
third processable condition;

a process request interpretation step of
15 interpreting a process request to perform a process on
the target information in accordance with a first
processable condition, which is within the third
processable condition received from the terminal in
accordance with a predetermined protocol; and

20 a process response creation part of creating a
process response to indicate a result of the process in
accordance with the predetermined protocol.